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EXAMINER

HUYNH, CONG LAC T

ART UNIT	PAPER NUMBER
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2176

DATE MAILED: 03/13/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

NM

Office Action Summary

Application No.

09/163,848

Applicant(s)

PEAIRS ET AL.

Examiner

Cong-Lac Huynh

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 January 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

1. This action is responsive to communications: RCE filed on 1/3/02 to the application filed on 09/30/98.
2. Claims 1-32 are pending in the case. Claims 1, 9, 13, 19, 24, 29 are independent claims.
3. The rejections of claims 1-5, 7, 9-11, 13-28 under 35 U.S.C. 103(a) as being unpatentable over Takano (5,983,246) in view of de Souza et al (5,848,418) have been withdrawn in view of applicants' argument .
4. The rejections of claims 1-5, 7, 9-11, 13-28 under 35 U.S.C. 103(a) as being unpatentable over Takano (5,983,246) and de Souza et al (5,848,418) and further in view of Iijima have been withdrawn in view of applicants' argument.
5. The rejections of claims 1-5, 7, 9-11, 13-28 under 35 U.S.C. 103(a) as being unpatentable over Takano (5,983,246) and de Souza et al (5,848,418) and further in view of Tim Ho et al. have been withdrawn in view of applicants' argument.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

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the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102((e), f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 1-3, 5, 7-9, 11, 13-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fan et al., *Segmentation and Classification of Multimedia Document, IEEE International Workshop*, pages 416-430, 3/1992 in view of Sasaki (US Pat No. 5,812,995, 9/22/98, filed 3/24/97).

Regarding independent claim 1, Fan discloses:

- analyzing textual content and graphical content of a previously unclassified electronic document to determined a textual profile and a graphical profile of the electronic document (page 417, lines 12 to page 418, lines 1-7, a proposed document analysis system...analyze the structure of Japanese newspaper...to classify text and image...)
- generating a classification of the document based on the textual profile and the graphical profile (page 417, lines 12-18, algorithm for automatic separation and classification of text, image and graphic ...; page 418, lines 1-7, proposed a texture analysis based algorithm to classify text and image...classify segmented blocks into different types of media)

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Fan does not disclose storing the electronic document in a pre-existing directory structure based on the classification of the document and a document classification profile associated with the pre-existing directory structure to resemble a classification approach of the user.

However, Fan does teach an algorithm for ***automatic separation and classification*** of text, image, and graphic that is *advantageous in reproducing, transmitting, and storing the multimedia document* (page 417, lines 12-18).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to have modified Fan to include storing the electronic document in a pre-existing directory structure based on the classification of the document and a document classification profile. The fact that said separation and classification are carried out automatically for advantageously storing multimedia documents suggests that storing the classified documents can be performed also by the system to preserve the accuracy of classified information.

Fan, however, does not disclose the directories for storing the classified documents.

Sasaki discloses the directories for storing the classified documents (figures 2, 4; col 5, lines 42 to col 6).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to have combined Sasaki into Fan to *provide the directory* for storing the classified documents where the directory is pre-existing in the system.

Since as in Fan, the textual profile and the graphical profile are for a classification of a document, and in Sasaki the files in the directory are arranged based on the

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classification attributes, it would have been obvious that *storing the classified documents based on the same profiles, either done by the system or by a user, would lead to the same outcome*. In other words, the storing done by the system in the pre-existing directory structure resembles a classification approach of the user.

Regarding claims 2, 3, 7, which are dependent on claim 1, Fan does not explicitly disclose that the *directory structure* comprises a hierarchy of documents mirroring in a similar fashion of the pre-existing memory.

Sasaki discloses generating a directory structure to store the classified documents (figures 1-2, 4; col 5, lines 12 to col 6, lines 1-47).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to have included the feature of a directory structure comprising a hierarchy of documents that mirror in a similar fashion of the pre-existing memory to Sasaki since by copying the directory structure for storing the classified documents, one obtains a mirror directory in a similar fashion of the pre-existing directory.

Regarding claim 5, Fan discloses:

- determining a point set corresponding to the electronic document, wherein points of the point set correspond to points of lines (pages 422-423, define the graphic as the block with parse dark pixels... evaluate the dark pixels...; the pixels in the bitmap of the document are equivalent to a point set corresponding to the electronic document, and since the bitmap is a *grid* of rows and columns of bit 1

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and bit 0 that the computer translates into pixels in the document, the pixel correspond to points of lines)

- determining a density of points within the point set (pages 422-423, evaluate the number of dark pixels for defining a block of graphic)
- classifying the multimedia document which includes text and graphic based on the feature of the media (page 418)

Fan does not disclose generating a document profile based, at least in part, on the density of points within the point set.

However, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to have modified Fan to include generating a document profile based, at least in part, on the density of points within the point set since the density of points within the point set as in Fan suggests generating such a document profile.

Regarding claim 8, which is dependent on claim 1, Fan and Sasaki do not disclose building the pre-existing directory structure by extracting graphical and text features from documents in a directory-based memory to obtain a document classification profile of each subdirectory in the directory-based memory.

However, Sasaki discloses the hierarchy of directories which include different levels of directories based on different categories of classification (figure 2).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to have modified Sasaki to include building the pre-existing directory structure by extracting graphical and text features from documents in a

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directory-based memory to obtain a document classification profile of each subdirectory in the directory-based memory because of the following reason. The different levels of directories, which are subdirectories, imply said building since the creation of the subdirectories in different levels of directories is based on different classification categories.

Independent claims 9 and 11 are for a machine-readable medium of the method of claims 1 and 5, and are rejected under the same rationale.

Regarding independent claim 13, as disclosed in claim 1 above, Fan discloses:

- analyzing documents in a pre-existing directory to determine a document classification profile of the pre-existing document directory structure (page 417, lines 12 to page 418, lines 1-7, a proposed document analysis system...analyze the structure ...to classify text and image...)
- analyzing *textual content* of the electronic document to determine a *textual profile* of the electronic document (page 417, lines 12 to page 418, lines 1-7, a proposed document analysis system...analyze the structure ...to classify text and image...)
- analyzing graphical content of the electronic document using image data of the document (page 418, lines 1-10, as to the block classification....proposed a texture analysis based algorithm to classify text and image....separate and classify the text, image...and analyze the structure of each separated media...)

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Fan does not disclose generating a *mirror directory* structure based on the pre-existing directory and placing a document in the *mirror directory* structure based on the organization of the pre-existing document directory structure.

Sasaki discloses:

- generating a directory structure (figure 1-2, 4; col 5, lines 12 to col 6, lines 1-47)
- placing the electronic document in the directory structure based on the document classification profile (figures 1 and 2)

Sasaki does not disclose that the directory structure for placing classified documents is a *mirror directory structure*, and said placing is based on the textual profile and the graphical profile of the document.

However, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to have included that feature into Sasaki since a mirror directory is generated by merely copying a directory structure, which is a pre-existing directory, formed before generating the mirror directory, as taught in Sasaki. Furthermore, since the directory structure is generated based on the *document classification* and *document attribute information file* (figure 2), it would have been obvious to one of ordinary skill in the art at the time of the invention was made to have combined Sasaki into Fan to obtain the directory structure as well as a mirror directory structure for storing documents classified based on text and graphics features of documents.

Regarding claim 14, which is dependent on claim 13, Fan does not disclose:

- generating a list of directories in the pre-existing document directory structure

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- examining files in the directories of the pre-existing document directory structure to determine content
- examining the content of the files to determine *the document classification profile* of the directories in the pre-existing document directory structure

Sasaki discloses:

- generating a list of directories in the pre-existing document directory structure (figure 2, Document and classification management directory #22 and Document preparation directory #24 are generated)
- examining files in the directories of the pre-existing document directory structure to determine content (figure 2, Group of Document Contents Files #22 shows that the document files are examined to be put in the directory)
- examining the content of the files to determine *the document classification profile* of the directories in the pre-existing document directory structure (figure 2, the classification attribute information file #28, which is equivalent to a document classification profile indicates that the content of the files is examined to derive the classification attribute information of the document)

Fan and Sasaki do not explicitly disclose the recursively descending the pre-existing document directory structure. However, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to have incorporated the recursively descending the pre-existing document directory structure into the hierarchical file system of Sasaki for facilitating in browsing the hierarchical directory in descending order.

Regarding claim 16, which is dependent on claim 13, the same argument is applied as in claims 1 and 2 above. The pre-existing directory is organized in hierarchy, which shows the relationships among directories, and the generating of a mirror directory is carried out by copying the pre-existing directory. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to have recognized that the copying will copy all features of the pre-existing directory to a mirror directory such as set of directories and relationships among them.

Regarding claims 17 and 18, Fan does not disclose:

- determining a primary directory and the secondary directory in the pre-existing document directory structure in which the document should be placed based on the document classification profile of the pre-existing document directory structure
- storing the document in a primary corresponding directory and storing the document in a secondary corresponding directory in the mirror directory structure that corresponds to the primary directory in the pre-existing document directory

Sasaki discloses the classification attribute information file which is equivalent to the document classification profile (figure 2, Classification Attribute Information File #28; col 2, lines 48-55) and storing documents in the directory (figure 2, Group of Document Contents Files # 25, Document Files #26 (1)-(3)).

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It would have been obvious to one of ordinary skill in the art at the time of the invention was made to have modified Sasaki to include the primary directory and the secondary directory to store document since whatever documents stored in either the primary directory or the secondary directory in the pre-existing directory will be stored in the equivalent directory of the mirror directory based on the *document classification profile* since the mirror directory is generated by merely copying from the pre-existing directory.

Claim 15, which is dependent on claim 13, includes the added limitations of claim 3, and is rejected under the same rationale.

Claims 19-23 are for the computer-readable medium of the method claims 13-14, 16-18, and are rejected under the same rationale.

Claims 24-28 are for an apparatus of claims 13-14, 16-18, and are rejected under the same rationale.

9. Claims 4 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fan in view of Sasaki as applied to claim 1 above, and further in view of Morita et al. (US Pat No. 5,832,470, 11/3/98, filed 9/29/95).

Regarding claim 4, which is dependent on claim 1, Fan does not disclose:

- determining characteristic words of the document
- determining a frequency for each characteristic word

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- building a frequency table based on the frequency associated with each characteristic word

Morita discloses

- determining characteristic words of the document (figure 13, #1301-#1309; figure 16, keywords in documents)
- determining a frequency for each characteristic word (figure 15; col 11, lines 58 to col 12, lines 1-7)
- building a frequency table based on the frequency associated with each characteristic word (figure 15, the frequency table based on the keyword in documents)

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to have combined Morita into Fan to facilitate the text classification in a document using the frequency of keywords in documents.

Independent claim 10 is for a machine-readable medium of the method of claim 1, and is rejected under the same rationale.

10. Claims 6 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fan in view of Sasaki as applied to claims 1 and 9 above, and further in view of Tim Ho et al. (*Decision Combination in Multiple Classifier Systems*, IEEE Transactions on Pattern Analysis and Machine Intelligence, Vol. 16, No. 1, January 1994).

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Regarding claim 6, which is dependent on claim 1, Fan does not disclose that the generating of a classification of a document based on the textual and graphical properties comprises combining results from the textual and graphical analysis using a Borda Count.

Ho discloses the Borda Count Method in which the Borda Count is a generalization of the majority vote and the Borda Count for a class is the sum of the number of classes ranked below it by each classifier (page 68, part B).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to have incorporated the assigning of points to classes and the sum of the points of Ho into Takano and de Souza since Takano and de Souza discloses the directories to store classified documents in different classes and different orders.

Claim 12 is a machine-readable medium for the method claim 6, and is rejected under the same rationale.

11. Claims 29-32 remain rejected under 35 U.S.C. 103(a) as being unpatentable over Mahoney (US Pat No. 5,889,886, 3/30/99, filed 11/28/95) in view of Sasaki et al. (US Pat No. 5,812,995, 9/22/98, filed 3/24/97).

Regarding independent claim 29 and dependent claim 30, Mahoney discloses:

- a document scanning device (figure 1A)

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- a document storage device coupled to the document scanning device, wherein the document storage device is organized as document directory structure having multiple directories (figure 1A, figure 2, figure 3)
- a processor coupled to the document scanning device and to the document storage device, wherein the processor analyzes *the content* of a document scanned by the document scanning device to store the document in a memory (figure 1B)

Mahoney does not disclose determining a directory to store the classified documents.

Sasaki discloses automatically storing the classified documents in the directory system (figures 1-2, 4).

Mahoney and Sasaki do not disclose that the storage device has a mirror directory having multiple directories organized based on the document directory structure.

However, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to have included the storage device has a mirror directory having multiple directories organized based on the document directory structure into Sasaki and combined Sasaki with Mahoney since the mirror directory is generated by merely copying the pre-existing directory.

In addition, Mahoney does not disclose storing of analyzed documents in the mirror directory corresponding to the pre-existing directory.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to have modified Sasaki to include said storing since by copying of the pre-existing directory, which includes classified documents, the documents will be stored in

corresponding directory equivalent to the pre-existing directory. In other words, the copied directory is a mirror directory.

Regarding claim 31, which is dependent on claim 29, Mahoney discloses that the processor analyzes files stored in the document directory structure to determine content and generates a *document classification profile* of the document directory structure based on the analysis (figure 1A, figure 2).

Regarding claim 32, Mahoney discloses that the document is analyzed based on image and textual content (col 1, lines 23-67; col 2, lines 1-6).

Response to Arguments

12. Applicant's arguments with respect to claims 1-32 have been considered but are moot in view of the new ground(s) of rejection.

Applicants argue that Takano does not disclose or suggest classifying previously unclassified electronic documents and storing the classified electronic documents in a directory to resemble the user's classification approach.

Examiner agrees.

Fan discloses classifying previously unclassified electronic documents based on the feature of text and images included in documents (page 418, lines 8-14; pages 421-423), and an algorithm for *automatic separation and classification of text, image,*

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and graphic that is *advantageous in reproducing, transmitting, and storing the multimedia document* (page 417, lines 12-18).

Sasaki discloses *storing the classified electronic documents in a directory* based on the classification attribute information (figure 2; col 5, lines 42 to col 6).

Since the classification of the documents in both Fan and Sasaki is based on the attribute or the feature of the document, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to have modified Fan to include *storing the electronic document in a pre-existing directory structure* based on the classification of the document and a document classification profile. The fact that said separation and classification are carried out automatically for advantageously storing multimedia documents suggests that storing the classified documents can be performed also by the system to preserve the accuracy of classified information.

Also, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to have combined Sasaki into Fan to provide the directory for automatically storing the classified documents where the directory is pre-existing in the system.

Since as in Fan, the textual profile and the graphical profile are for a classification of a document, and in Sasaki the files in the directory are arranged based on the classification attributes, it would have been obvious that *storing the classified documents based on the same profiles, either done by the system or by a user, would lead to the same outcome*. In other words, the storing done by the system in the pre-existing directory structure resembles a classification approach of the user.

Applicants argue that Mahoney does not disclose or suggest determining a directory in which the document scanned by the document device should be placed.

Examiner disagrees.

Since Mahoney invention has practical advantages in optical character recognition system and may also be employed in *document search and retrieval systems* based on the document classification (col 3, lines 56-67), Mahoney suggests determining a directory for placing the scanned document since the document should be stored in an appropriate directory so that the document can be retrieved appropriately later for the search purpose.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Snow et al. (US Pat No. 6,098,066, 8/1/00, 6/13/97).

Fan et al. (US Pat No. 5,850,474, 12/15/98, 7/26/96).

Revankar et al. (US Pat No. 5,767,978, 6/16/98, filed 1/21/97).

Scherl et al. (US Pat No. 4,503,556, 3/5/85).

Kohno et al. (US Pat No. 5,819,300, 10/6/98, filed 11/4/97, priority 12/27/94).

Wang (US Pat No. 5,854,853, 12/29/98, filed 2/5/96).

Withgott et al. (US Pat No. 5,390,259, 2/14/95, filed 11/19/91).

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14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cong-Lac Huynh whose telephone number is (703)-305-0432. The examiner can normally be reached on Monday through Friday from 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Heather Herndon, can be reached on (703) 308-5186. The fax number to this Art Unit is (703) 308-9731.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-3900.

15. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

Or faxed to:

(703) 308-9051, (for formal communications intended for entry)

Or:

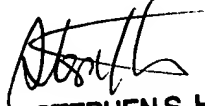
(703) 308-5403 (for informal or draft communications, please label

"PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA. Sixth Floor (Receptionist).

clh

3/6/02


STEPHEN S. HONG
PRIMARY EXAMINER